

## (54) MANUFACTURE OF SEMICONDUCTOR DEVICE

(11) 62-283678 (A) (43) 9.12.1987 (19) JP

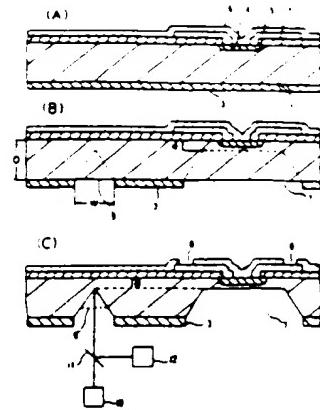
(21) Appl. No. 61-125655 (22) 2.6.1986

(71) NISSAN MOTOR CO LTD (72) HIDETOMO NOJIRI

(51) Int. Cl'. H01L29/84, H01L21/306

**PURPOSE:** To accurately and easily form the necessary thickness of a thin film in case of etching by simultaneously etching predetermined parts except a thin film structure of a semiconductor substrate, emitting a light to the predetermined part during etching to detect the depth of etching, thereby controlling the etching.

**CONSTITUTION:** Silicon oxide films 2, 3 are formed on upper and lower surfaces of an N-type Si semiconductor substrate 1, and a P-type diffused resistance region 4, an aluminum wiring layer 5 and a PSG film 6 are formed. Then, a diaphragm 7 and the film 3 of an etching end point detecting region 9 are removed by photoetching, with the film as a mask it is etched. A light is emitted perpendicularly from a light source 10 through an optical system 11 to the region 9 during the etching, and the reflected light is detected by a photodetector 12. An etchant uses a crystal surface selective etchant. Accordingly, the reflected light is generated with respect to an incident direction while the surface perpendicular to the incident direction of the light as designated by a broken line 9' remains on the way of etching, but when a V-shaped groove is completed, the reflection of the incident direction becomes almost naught.



## (54) MANUFACTURE OF SEMICONDUCTOR PRESSURE SENSOR

(11) 62-283679 (A) (43) 9.12.1987 (19) JP

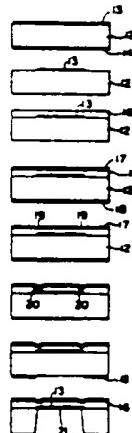
(21) Appl. No. 61-127723 (22) 2.6.1986

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(51) Int. Cl'. H01L29/84, H01L21/306

**PURPOSE:** To reduce the irregularity of the thickness of a diaphragm by growing a semiconductor layer on a semiconductor substrate on which an etching stop layer is formed on a predetermined region, forming a gauge resistor on the layer, and etching from the lower surface of the substrate to the stop layer.

**CONSTITUTION:** SiO<sub>2</sub> films 13, 14 are formed on the upper and lower surfaces of an N-type silicon wafer 12, and an SiO<sub>2</sub> film 13 remains in a circular shape at the center on the upper surface of a photolithography. Then, an N-type silicon is epitaxially grown on the upper surface of a wafer to form a semiconductor layer 16. Then, SiO<sub>2</sub> films 17, 18 are formed on the upper and lower surfaces of the wafer, and a diffusing window 19 is formed at the film 17 by photolithography. Then, the wafer is disposed in a diffusing furnace, boron is supplied, and a gauge resistor 20 is formed. Thereafter, the center of the film 18 on the lower surface of the substrate 1 is removed by photolithography. Then, the wafer is etched from the lower surface with an etchant to form a diaphragm 21.



## (54) SEMICONDUCTOR DEVICE

(11) 62-283680 (A) (43) 9.12.1987 (19) JP

(21) Appl. No. 61-126507 (22) 31.5.1986

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(51) Int. Cl'. H01L31/04

**PURPOSE:** To effectively reduce the reflection coefficient of a semiconductor device by utilizing a multiple reflections by forming a texture structure on a single crystal silicon substrate, and forming an active layer made of compound semiconductor thereon, thereby forming the upper layer of the active layer as an active layer of high quality.

**CONSTITUTION:** A texture (pyramidlike uneven surface) structure is formed on a single crystal Si (100) substrate 1. The substrate 1 is treated with an aqueous solution of 60% hydrazine (N<sub>2</sub>H<sub>4</sub>), and the texture structure is obtained even by treating with an aqueous solution of 1% NaOH. After an active layer 2 of compound semiconductor, such as GaAs thin film is epitaxially grown, for example, by an MOCVD method (vapor growth using organic metal) by the substrate 1, a reflection preventive film 3 and electrodes are formed.

